

LXXVIII. *New Observations upon the Worms that form Sponges.* By John Andrew Peyssonel, M. D. F. R. S. *Translated from the French.*

Read Feb. 23.
1758.

THE existence of the nests of corallines and lithophyta, and the mechanism of their polypi, made me conjecture, that it was the same with respect to sponges; that animals, nested in the interstices of their fibres, gave them their origin and growth: but I had not yet seen nor discovered the insects, nor observed their work. Sponges appeared to me only as skeletons: but I at length discovered these worms, which form sponges, in the four following species:

1. *Spongia Americana tubo similis*; The tube-like sponge of Plumier.
2. *Spongia Americana longissima funiculo similis*; The cord-like sponge of Plumier.
3. *Spongia Americana capitata et digitata*; The fingered sponge of Plumier.
4. *Spongia Americana favo similis*; The honeycomb sponge of Plumier.

These four kinds only differ in form: they have the same qualities, are made by the same kinds of worm, and what may be said of the one agrees exactly with all the rest; for I made the same observations upon them all.

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They may be classed among the *spongiæ hyrcinæ*, so called by J. Bauhin, because of the roughness of their fibres, by a metaphor, from pieces covered with mud; or among those called by Pliny *tragos*, or *aphysæ*, being foul, and difficult to cleanse; and may take the name, which Father Plumier has given them, drawn from their figure.

These four kinds of sponges are composed of hard, firm, dirty fibres, sometimes brittle; separated one from another, having large hollows, or cylindrical tubes, dispersed thro' their substance. These tubes are smooth within. The interstices of their fibres are filled with a mucilaginous gluey matter, when the sponge is just taken out of the sea. The mucilage is of a blackish colour, soon putrifies in the water, or falls into dust when dried in the sun.

When a fresh sponge is squeezed, this mucilage comes out frothy, by the mixture of the windings of its fibres: it always issues forth with sand, or little parcels of shells crushed by the sea. These fibres, which consist of the twisted doubles of the sponge, form as it were a labyrinth filled with worms, which are easily crushed, and their juice is confused with the mucilage; but having carefully torn the sponges, and their gross fibres, I discovered the living worms, such as I shall mention hereafter.

These species of sponge commonly grow upon sandy bottoms. At their origins we perceive, as it were, a nodule of sand, or other matter, almost petrified, round which the worms begin to work, and round which they retire, as to their last seat or refuge; where I had the pleasure of seeing them play, exercise themselves, and retire, by examining them with
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the microscope ; and I have even made my observations without its assistance.

A Description of the Worms which form the Sponges.

The worms I found in these kinds of sponges are about one-third of a line thick, and two or three lines in length. They are so transparent, that one may discern their *viscera* thro' their coverings and substance : the blood may be seen to circulate, and all their parts to act. They have a conic figure, with a small black head furnished with two pincers : the other extremity is almost square, and much larger than the head. Upon the back may be seen two white streaks or fillets, as if they contained the chyle : these two canals are parallel to each other from the head to the other extremity, where they come together. In the middle, where the belly and *viscera* ought to be placed, a blackish matter is perceivable, which has a kind of circulation : sometimes it fills all the body of the worm, sometimes it gathers towards the head, or at the other end, and sometimes it follows the motion of the animal. This vermicular motion or progression begins at the posterior extremity, and ends at the head, which is pushed, and consequently advances forward. I kept these worms alive out of the sponge, quite detached from it, more than an hour, having examined them thoroughly with a middling magnifier ; for a great magnifier would be the grave of the insect.

I was surprised, after having finished my observations, when I put them near a piece of the fresh sponge, where the nests were moist, and from which
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I had pulled them, to see them enter into them, and disappear, being lost in the windings of the tubes. I thought to have found them again ; but it was a difficult task to search for them. I crushed them, or they were themselves mashed in the tubes, which I pressed, and of which I had consequently spoiled the texture ; but I could not find them ; and this happened several times.

These worms have no particular lodge : they walk indifferently into the tubular labyrinth. So that, without offence to Pliny and other naturalists, I do not see, that it is in their power to dilate and contract the bodies of the sponges ; which always remain in the same state of magnitude, without being any way sensible to the touch, or any other motion of the sea, nor to any other accident whatsoever, being an inanimate body ; for the animal sensitive life, or whatever you will have it, belongs only to the worms, that form these bodies, and which are their dwelling-places ; and which, by the slaver or juice they deposit, make the sponge increase or grow, as bees, wasps, and especially the wood-lice of America, increase their nests or cells.

These sponges, nests, or cells, are attached to some solid body in the sea. Some kinds are fixed to rocks ; others, as those I am speaking of, are fastened to heaps of sand, or to pieces of petrified matter, and even upon sandy bottoms ; and the sea putting in motion the sand, and the little parcels of broken shells, forces them into the holes of the sponge : there the sand binds and mixes with mucilaginous juice, and never is loosed from it but when the sponge is well dried, or with the mucilage when

putrified, or in powder; and yet some part will remain, which it is very difficult to take out from the twisted canals, especially in those sponges of the *tragos* kind, so hard to cleanse. In a word, the blood or humours, which the ancients have observed, is no other than the mucilage or juice of the substance of these worms.

Dated at Guadaloupe,
1 March, 1757.

LXXIX. *Account of an Experiment, by which it appears, that Salt of Steel does not enter the Lacteal Vessels; with Remarks. In a Letter to the Rev. Tho. Birch, D.D. Secr. R. S. By Edward Wright, M. D.*

S I R,

Read Mar. 2,
1758.

TH O' iron is universally allowed to be one of the most powerful medicines now in use, yet many physicians observing, that the *faces* of patients, who used it either in a metallic or saline form, were tinged of a black colour, have been led to think, that, in a metallic state, it could not be reduced into particles fine enough to be received by the lacteal vessels; and if taken in a saline form, that it underwent a precipitation in the intestines, by which, being reduced to an earth or calx, it was in like manner rendered incapable of making its way into the blood. But the accurate experiments, with which Signor Menghini has favoured